REMARKS

Favorable reconsideration and allowance of the claims of the present application are respectfully requested.

Before addressing the specific grounds of rejection raised in the outstanding Office Action, applicants have amended Claims 1, 24, 25, 26 and 27 to positively recite that the claimed processing steps provide a buried oxide that has *thermal oxide characteristics including a breakdown field of greater than about 8 MV/cm for a full thickness from 1300-1600 Å and a break down field of greater than about 5 MV/cm at a thickness of greater than 900 Å*. Support for the aforementioned amendment to the claims is found throughout the specification of the instant application. See, for example, Page 5, paragraph [0013].

Since the above amendment to the claims does not introduce new matter into the originally filed specification, entry thereof is respectfully requested.

In the outstanding Office Action, Claims 1-27 are rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. Specifically, the Examiner indicated that that specification does not provide support for an SOI substrate that includes stoichiometric oxide uniformly distributed therein despite the language that appears in paragraph [0011]. In response thereto, and to advance prosecution of the present application, applicants have cancelled the phrase "that includes stoichiometric oxide uniformly distributed therein and" from the claims. This amendment to the claims obviates the rejection under 35 U.S.C. § 112, first paragraph. Therefore, reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1-27 stand rejected under 35 U.S.C. § 103 as allegedly unpatentable over the disclosure of U.S. Patent No. 5,930,643 to Sadana et al. ("Sadana").

Applicants respectfully submit that claimed methods recited in independent Claims 1, 24, 25, 26 and 27 are patentably distinguishable over Sadana since the claims of the present application recite the optimal conditions that are necessary to achieve a buried oxide that has *thermal oxide characteristics including a breakdown field of greater than about 8 MV/cm for a full thickness from 1300-1600 Å and a break down field of greater than about 5 MV/cm at a thickness of greater than 900 Å.* In accordance with the present claimed methods, such a buried oxide (BOX) is achieved by utilizing a process in which at least one of the following conditions is meant: (i) a first oxygen ion implantation is performed using an oxygen ion dose of about 2.5E17 cm^{-2} or less, (ii) a second oxygen ion implantation is performed at an energy that is about 5 to about 20 % less than an energy used during the first oxygen ion implantation, and/or (iii) a pre-annealing soak cycle is employed prior to an internal oxidation step.

Applicants submit that Sadana discloses wide ranges for the first and second oxygen ion implantation steps and fails to recognize the criticality of performing the oxygen ion implantations within the claimed ranges for providing a BOX that has *thermal oxide characteristics including a breakdown field of greater than about 8 MV/cm for a full thickness from 1300-1600 Å and a break down field of greater than about 5 MV/cm at a thickness of greater than 900 Å.* For example, Sadana discloses that the first oxygen ion implantation can be performed using an oxygen ion dose from about $5x10^{16}$ to about $6x10^{17}$ cm^{-2}. There is no teaching or suggestion in Sadana that a BOX having *thermal oxide characteristics including a breakdown field of greater than about 8 MV/cm for a full thickness from 1300-1600 Å and a break down field of greater than about 5 MV/cm at a thickness of greater than 900 Å.* can be obtained if the oxygen dosage of the first oxygen ion implantation is performed at an oxygen dose of 2.5E17 cm^{-2} or less.

Applicants note that the Sadana reference is discussed in great details in the instant application. See, for example, paragraphs [0006]-[0008]. Applicants observe that in the instant application, it is indicated that in Sadana the lower region of the BOX includes non-stoichiometric oxide. The presence of the non-stoichiometric oxide leads to a BOX region that has non-thermal oxide characteristics (as well as some thermal characteristics) and thus the BOX region disclosed in Sadana et al. would have inferior electrical qualities, in terms of breakdown field as compared to the present invention. In applied reference, a breakdown field of greater than 5 MV/cm is mentioned however there is no indication of the thickness of the BOX at such a breakdown field. In the claimed invention, a BOX having *thermal oxide characteristics including a breakdown field of greater than about 8 MV/cm for a full thickness from 1300-1600 Å and a break down field of greater than about 5 MV/cm at a thickness of greater than 900 Å* is provided. No such BOX region having the claimed breakdown field and the claimed thickness range is provided in the applied reference.

Likewise, Sadana does not teach or suggest that a BOX having *thermal oxide characteristics including a breakdown field of greater than about 8 MV/cm for a full thickness from 1300-1600 Å and a break down field of greater than about 5 MV/cm at a thickness of greater than 900 Å* can be obtained if the energy of the second oxygen ion implantation step was at a range that was from about 5 to about 20% below the energy of the first oxygen ion implantation. Applicants observe that in Sadana it is mentioned that the first and second implantation can be performed at the same or different energies without specifically reciting that a BOX has *thermal oxide characteristics including a breakdown field of greater than about 8 MV/cm for a full thickness from 1300-1600 Å and a break down field of greater than about 5 MV/cm at a thickness of greater than 900 Å* can be obtained by employing a second oxygen ion

implantation at an energy of 5 to about 20% less than the energy used in the first oxygen ion implantation step. Furthermore, in the examples of Sadana the first and second oxygen ion implantation steps are performed at the same energies.

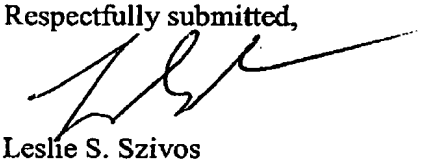
Applicants further submit that Sadana also does not teach or suggest a pre-anneal soak cycle that is capable of providing a BOX having *thermal oxide characteristics including a breakdown field of greater than about 8 MV/cm for a full thickness from 1300-1600 Å and a break down field of greater than about 5 MV/cm at a thickness of greater than 900 Å.* In Sadana, the soaking cycle is performed at 1000°C in 100% O_2. Applicants respectfully submit that the conditions of the prior art soaking cycle disclosed in Sadana is incapable of sufficiently providing the claimed BOX region.

In summary, the methods of the claimed invention provide the critical conditions that are necessary to achieve a BOX having *thermal oxide characteristics including a breakdown field of greater than about 8 MV/cm for a full thickness from 1300-1600 Å and a break down field of greater than about 5 MV/cm at a thickness of greater than 900 Å.* Sadana, although disclosing wide ranges for the first oxygen ion implantation, the second oxygen ion implantation and the oxidation step, do not disclose the critical conditions that are required to obtain the recited BOX region that has the claimed characteristics of a thermal oxide. Although Sadana, does mentioned that there BOX has a breakdown field that it relatively high, the applied reference fails to disclose the thickness of the BOX at the reported breakdown field.

Based upon the above remarks, the rejection under 35 U.S.C. § 103 citing Sadana has been obviated. Reconsideration and withdrawal of the obviousness rejection are thus respectfully requested.

In view of the foregoing amendments and remarks, it is firmly believed that the present case is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,



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